

International
IR Rectifier

STPS40L15CW

SCHOTTKY RECTIFIER

2 x 20 Amps

$$I_{F(AV)} = 40\text{Amp}$$

$$V_R = 15\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	15	V
I_{FSM} @tp = 5 μ s sine	700	A
V_F @19 Apk, $T_J = 125^\circ\text{C}$ (per leg, Typical)	0.25	V
T_J	-55 to 125	$^\circ\text{C}$

Description/ Features

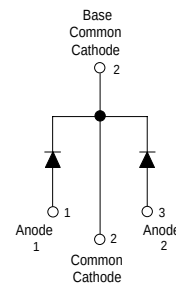
The STPS40L15CW center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 $^\circ\text{C}$ junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ\text{C}$ T_J operation ($V_R < 5\text{V}$)
- Center tap module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance

Case Styles



TO-247AC



STPS40L15CW

Bulletin PD-20622 rev. B 10/06

International
IOR Rectifier

Voltage Ratings

Part number	STPS40L15CW
V_R Max. DC Reverse Voltage (V) @ $T_J = 100\text{ }^{\circ}\text{C}$	15
V_{RWM} Max. Working Peak Reverse Voltage (V) @ $T_J = 100\text{ }^{\circ}\text{C}$	

Absolute Maximum Ratings

Parameters	Value	Units	Conditions
$I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device)	20 40	A	50% duty cycle @ $T_C = 86\text{ }^{\circ}\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	700 330	A	5 μ s Sine or 3 μ s Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated V_{RRM} applied
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25\text{ }^{\circ}\text{C}$, $I_{AS} = 2\text{ Amps}$, $L = 5\text{ mH}$
I_{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 μ sec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Value	Units	Conditions
V_{FM} Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	Typ.	Max.	
	0.41	V	@ 19A $T_J = 25\text{ }^{\circ}\text{C}$
	0.52	V	@ 40A $T_J = 25\text{ }^{\circ}\text{C}$
	0.25 0.33	V	@ 19A $T_J = 125\text{ }^{\circ}\text{C}$
I_{RM} Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	0.37 0.50	V	@ 40A $T_J = 125\text{ }^{\circ}\text{C}$
	- 10	mA	$T_J = 25\text{ }^{\circ}\text{C}$
$V_{F(TO)}$ Threshold Voltage	- 600	mA	$T_J = 100\text{ }^{\circ}\text{C}$ $V_R = \text{rated } V_R$
r_t Forward Slope Resistance	0.182	V	$T_J = T_J \text{ max.}$
C_T Max. Junction Capacitance (Per Leg)	7.6	m Ω	
L_S Typical Series Inductance (Per Leg)	- 2000	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25\text{ }^{\circ}\text{C}$
dv/dt Max. Voltage Rate of Change (Rated V_R)	8 -	nH	Measured lead to lead 5mm from package body
	10000	V/ μ s	

(1) Pulse Width < 300 μ s, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 125	$^{\circ}\text{C}$	
T_{stg} Max. Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	1.4	$^{\circ}\text{C/W}$	DC operation * See Fig. 4
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.7	$^{\circ}\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.24	$^{\circ}\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	6 (0.21)	g (oz.)	
T Mounting Torque	Min. 6 (5) Max. 12 (10)	Kg-cm (lbf-in)	Non-lubricated threads
Case Style	TO-247AC (TO-3P)	JEDEC	

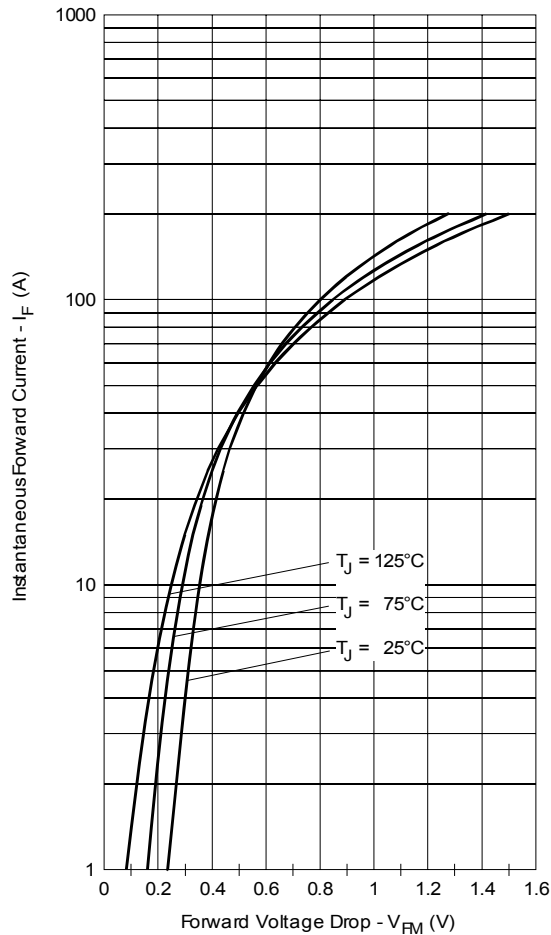


Fig. 1 - Maximum Forward Voltage Drop Characteristics

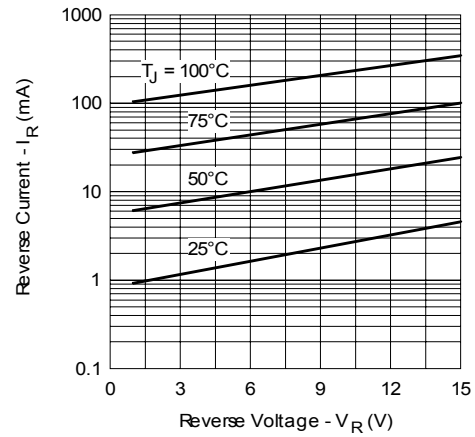


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

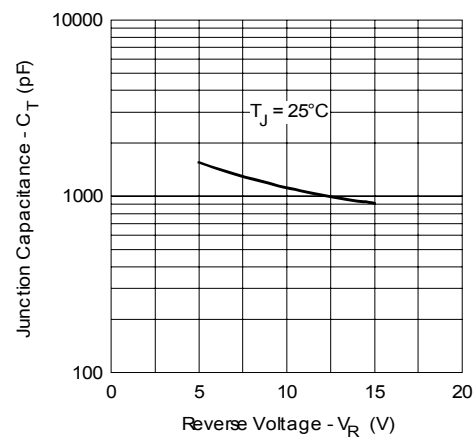


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

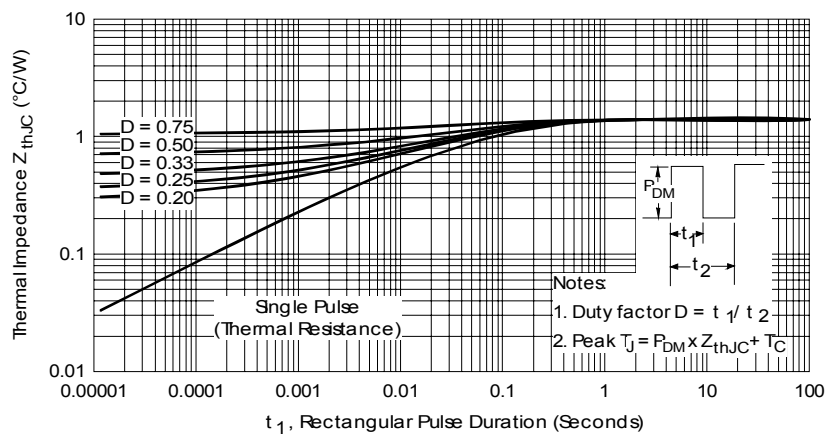


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

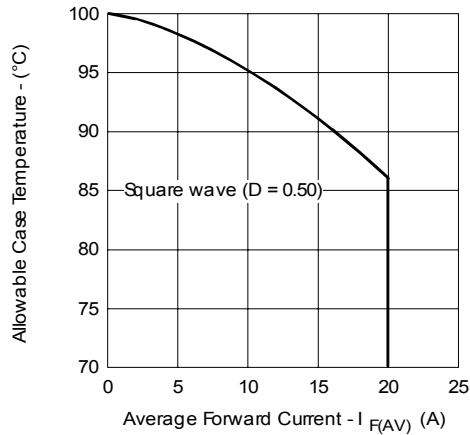


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

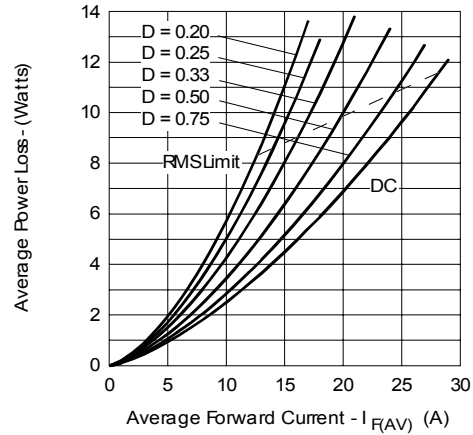


Fig. 6 - Forward Power Loss Characteristics

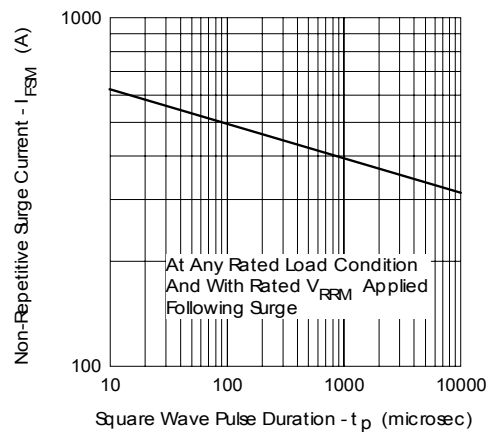


Fig. 7 - Maximum Non-Repetitive Surge Current

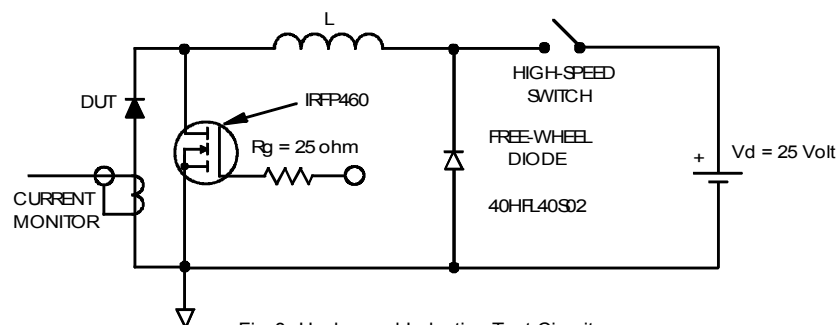
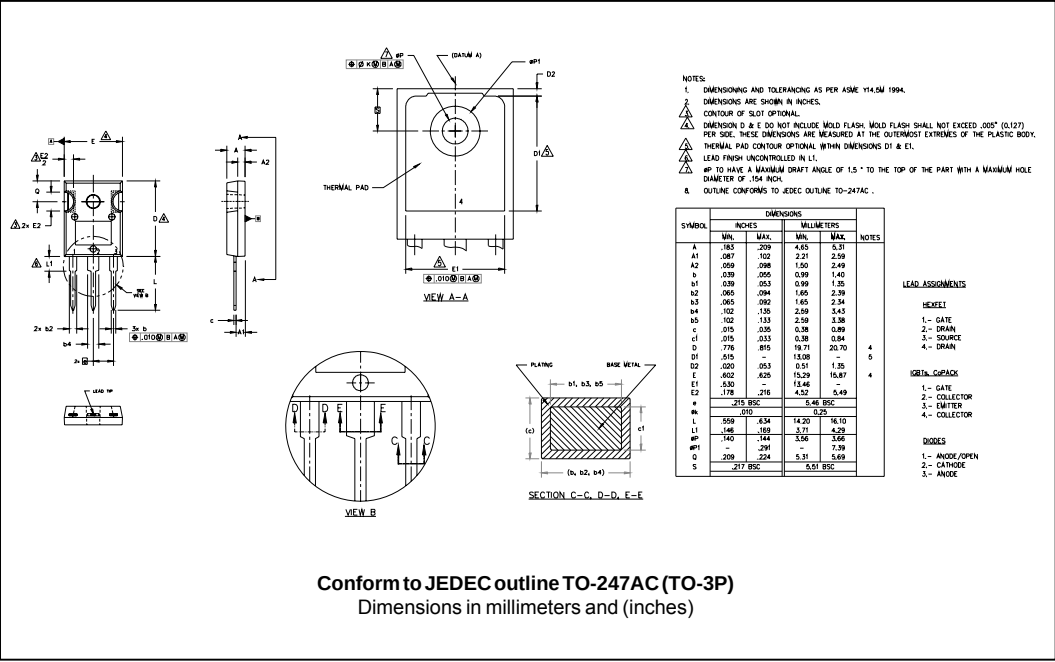
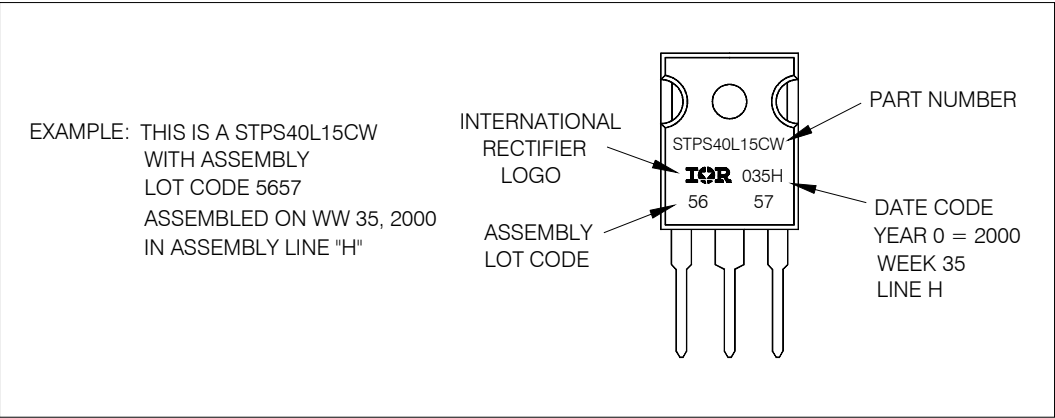


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



Ordering Information Table

Device Code

STPS	40	L	15	CW	-
1	2	3	4	5	6

- 1** - Schottky STPS Series
- 2** - Current Ratings (40 = 40A)
- 3** - L = Low Forward Voltage
- 4** - Voltage Code (15 = 15V)
- 5** - Package
CW = TO-247
- 6** -
 - none = Standard Production
 - PbF = Lead-Free

Tube Standard Pack Quantity : 25 pieces

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

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